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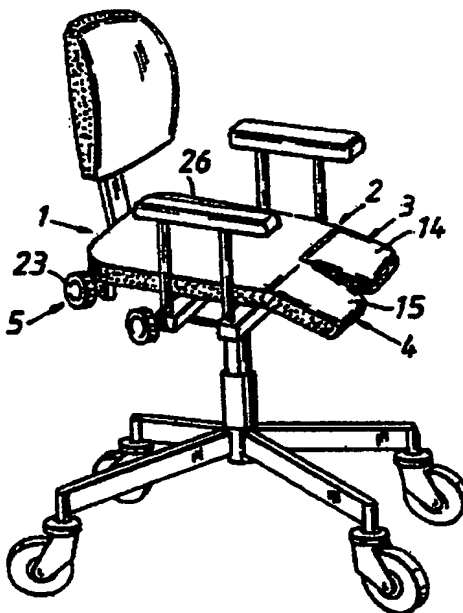
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(21) International Application Number: PCI/SE93/00185 (22) International Filing Date: 4 March 1993 (04.03.93) (30) Priority data: 9200680-8 5 March 1992 (05.03.92) SE (71) Applicant (for all designated States except US): MERCADO MEDIC AB [SE/SE]; Box 1074, S-181 22 Lidingö (SE). (72) Inventor; and (75) Inventor/Applicant (for US only): DU RÉES, Stephan [SE/SE]; Pyrolavägen 24, S-181 60 Lidingö (SE). (74) Agents: BJELKSTAM, Peter et al.; Kransell & Wennborg AB, Box 27834, S-115 93 Stockholm (SE).	(81) Designated States: FI, NO, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published With international search report. With amended claims. In English translation (filed in Swedish).	

(54) Title: ARRANGEMENT FOR A CHAIR



(57) Abstract

The invention relates to an arrangement for a chair, suitable for a person with a stiff hip, or other handicap, and includes a seat (1) having two flaps at its front portion (2), these flaps (3; 4) being angularly adjustable relative to the general plane of the seat. With the aid of an accessible control means (5) a drive means (6) is actuated such as to be automatically, infinitely variably adjustable from/to a bottommost, lowered position (A) of the flap (3; 4) forming a negative angle to the general plane of the seat (1) to/from an uppermost, raised position (B) of the flap (3; 4) forming a positive angle to the general plane of the seat (1).

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Arrangement for a chair

The present invention relates to an arrangement for a chair, preferably of the type that is both adaptable and versatile, such as to be suitable for a person with a stiff hip, or other disability. The chair includes a seat, having two flaps at its front portion, these being angularly adjustable as required, in relation to the general plane of the seat.

Chairs already known in the art, intended for persons handicapped with hip and/or leg stiffness, have a seat which may be divided into either two or three parts, which are adjustable in relation to each other for obtaining the best sitting comfort. These different movable parts are mounted on the chair frame with the aid of hinges, and are provided with latching means for keeping them in desired positions. It has now been found that this type of seat is not entirely satisfactory, since it is difficult to adjust, both by the disabled person and by any attendant who could presumably be available. For the disabled person it is very important that the seat gives sufficient support to a stiff leg and/or hip at an exact height of the respective movable and adjustable seat part. The greatest problem here is that of latching the movable parts. This is most often accomplished with the aid of a thumbwheel equipped with a latching pin, the thumbwheel being turned anticlockwise when adjustment is to take place, thus allowing the respective movable seat part to be moved by hand to a desired position, whereafter the thumbwheel is turned clockwise, thereon causing the latching pin to come into engagement with an adjusting rod, which projects out from, and is situated under, the adjustable seat part. It is difficult for a disabled person to use sufficient force to turn the thumbwheel such as to latch the respective adjustable seat part.

If the thumbwheel is tightened too lightly, the set position of the seat part will yield on being subjected to pressure, and will come loose completely in some cases. If the thumbwheel is tightened too heavily, it may be practically impossible for the disabled person to release it again for adjustment. If the positional fixation of the movable parts should suddenly become loose, or be released by itself, e.g. due to insufficient tightening of a thumbwheel, a person, and particularly one newly operated, could be caused injury and pain as a result. It is accordingly very difficult for the disabled person him- or herself, as well as any attendant, to achieve a positive and exact setting of the adjustable parts of the chair seat, as desired by the person in question.

The object of the present invention is to surmount these drawbacks, and to provide an arrangement for a chair with an adjustable seat of the type mentioned in the introduction, with which a disabled person may obtain full support from the seat. This is achieved by the respective flap being operated by a drive means actuated by an easily accessible control means, such that the flap is automatically, infinitely variably adjustable from/to a bottommost, lowered position, forming a negative angle relative to the general plane of the seat, and to/from an uppermost, raised position, forming a positive angle relative to this plane.

By reason of the present invention, even the disabled person him-/herself can now very easily effect adjustment of the flaps pertaining to the chair seat, and to an exact, desired setting for obtaining the best support. The inventive arrangement constitutes a safety lock of the movable parts, in that during, as well as after the actual adjustment the parts are automatically locked in precisely that position in which they are in.

The invention will now be described in more detail, and with reference to the accompanying drawing, where:

Fig. 1 is a perspective view of a chair including the arrangement in accordance with the invention,

Fig. 2 is a partial view, seen in perspective from below, showing the seat of the chair illustrated in Fig. 1 and

Fig. 3 is a schematic side view of the chair in Fig. 2, showing the flaps in different positional settings.

As will be seen from the figures, the invention constitutes an arrangement for a chair, which includes a seat 1, having flaps 3, 4 at its front portion 2, where the angles of these flaps can be adjusted as desired, relative to the general plane of the seat 1. The respective flap 3 or 4 is operated by a drive means 6 actuated by an easily accessible control means 5, such that the flap is automatically, infinitely variably adjustable from a bottommost, lowered position A, forming a negative angle relative to the plane of the seat 1, and to an uppermost, raised position B, forming a positive angle relative to the plane of the seat 1, and vice versa.

As will be apparent in detail from Fig. 2, the seat 1 includes a base plate 7 having two flap elements 9, 10 pivotably mounted on the front edge 8 of the base plate. A sitting cushion or pad 26 is mounted on a support member 11 and its support parts 12, 13, the member 11 and parts 12, 13 being in turn respectively mounted on the base plate 7 and elements 9, 10. The pad 26 forms an integrated seating member having two flap-like formations 14, 15.

The drive means 6 comprises a piston 17, reciprocably movable into, and out from a drive cylinder 16. At its free, outer end 18 the piston 17 is pivotably attached to a link 19, the other end of which being pivotably connected to a guide pin 20 fixed to, and projecting downwards from the underside of the respective flap element 9 or 10. The reciprocable piston 17 is infinitely variably movable to different, selectable, fixed positions in its direction of movement, via the drive cylinder 16, which is actuated by the control means 5. The drive cylinder 16 is provided with an internal thread (not illustrated on the drawing) mating with a complementary thread on the piston 17. Accordingly, when the drive cylinder 16 is turned, the threads coact to cause the piston 17 to move into, or out from the cylinder, while simultaneously affecting the angular attitude of the respective flap 3 or 4 to the seat 1.

In the preferred embodiment example, the control means 5 comprises a thumbwheel 23, rotatably mounted in a holder 24, and connected to a drive cylinder 16 with the aid of a cable or wire 25, for translating the rotational movement of the thumbwheel 23 to the cylinder 16. The latter is rotatably mounted in retaining bearing blocks 21, 22 on the underside of the base plate 7. The flap elements 9 and 10 are pivotably mounted on the base plate with the aid of hinges 27 in a suitable way, the seat pad 26 is attached to the support plate 11 and its support parts 12, 13 carrying the formations 14, 15. These support plates 11-13, with the seat pad 26 resting on them, are fastened to the base plate 7 and its flap elements 9 and 10 in a suitable way, e.g. with the use of screws 28.

The flaps 3 and 4 project from the forward portion 2 of the seat 1 a distance which is substantially one-third of the total depth of the seat 1. In alternative embodiments, the

drive means 6 may comprise any suitable form of driving device, e.g. a pneumatic piston or electric motor, for actuating the movement of the link 19 such as to swing the respective flap 3 or 4 with, or without assistance from the reciprocably movable piston 17. In such a case, the control means 5 may comprise, instead of a thumbwheel 23, some form of switch for activation of the drive means 6. In the illustrated, preferred embodiment example, the control means 5 is placed at each of the rear corner portions of the seat.

Claims

1. Arrangement for a chair, preferably of the type that is both adaptable and versatile such as to be suitable for a person with a stiff hip or other handicap, the chair including a seat (1) having two flaps (3, 4) at its front portion, the angular relationship of these flaps to the general plane of the seat being adjustable as desired, characterized in that with the aid of a drive means (6) actuated by an easily accessible control means (5) the respective flap (3; 4) is automatically, infinitely variably adjustable from/to a bottommost, lowered position (A) of the flap (3; 4) forming a negative angle relative to the general plane of the seat (1), and to/from an uppermost, raised position (B) of the flap (3; 4) forming a positive angle to said seat plane.

2. Arrangement as claimed in claim 1, characterized in that the seat (1) includes a base plate (7) having two flap elements (9, 10) pivotably mounted at the front edge (8) thereof, there also being a seat pad (26) mounted on the base plate and its flap elements (9, 10) via support plates (11-13), said pad having flap-like formations (14, 15) at its front portion (2), said formations being inseparably formed together with the seat pad (26) to provide an integrated seat.

3. Arrangement as claimed in claim 1 or 2, characterized in that the drive means (6) comprises a piston (17) reciprocally movable out of, and into a drive cylinder (16), the outer end (18) of the piston being pivotably attached to a link (19), which in turn is pivotably attached at its other end to a guide pin (20) rigidly attached to, and projecting downwards from the underside of the respective flap element (9, 10), said piston being infinitely variably

movable to different, selected, fixed positions in its direction of movement via the drive cylinder (16) under actuation of the control means (5).

4. Arrangement as claimed in claim 3, characterized in that the drive cylinder (16) includes an internal thread for coaction with a mating, complementary thread on the piston (17), such that on turning the drive cylinder (16) in its supporting bearing blocks (21, 22) relative to the piston (17), the latter is moved either into, or out from the cylinder (16) while simultaneously affecting the angular attitude of the respective flap element (9; 10) in relation to the base plate (7).

5. Arrangement as claimed in any one of the preceding claims, characterized in that the control means (5) comprises a thumbwheel (23) mounted for rotation in a holder (24), and connected to the drive cylinder (16) by a cable or wire (25) for translating the rotational movement of the thumbwheel (23) to the drive cylinder (16).

6. Arrangement as claimed in claim 1, characterized in that the respective flap (3; 4) projects out from the front portion (2) of the seat (1) a distance which is substantially one-third of the total depth of the seat (1).

AMENDED CLAIMS

[received by the International Bureau on 5 August 1993 (05.08.93);
original claims 1-6 replaced by amended claims 1-4 (2 pages)]

1. Arrangement for a chair, preferably of the type adapted for a person with a handicap, the chair including a seat (1) having two flaps (3, 4) at its front portion (2), the angular relationship of these flaps to the general plane of the seat being adjustable as desired, with the aid of a drive means (6) actuated by a control means (5) mounted on an edge portion of the chair seat the respective flap (3; 4) is variably adjustable from/to a bottommost, lowered position (A) of the flap (3; 4) forming a negative angle relative to the general plane of the seat (1), and to/from an uppermost, raised position (B) of the flap (3; 4) forming a positive angle to said seat plane, characterized in that the seat (1) includes a base plate (7) having two flap elements (9, 10) pivotably mounted at the front edge (8) thereof, there also being a seat pad (26) mounted on the base plate and its flap elements (9, 10) via support plates (11-13), said pad having flap-like formations (14, 15) at its front portion (2), said formations being inseparably formed together with the seat pad (26) to provide an integrated seat, and said drive means (6) comprises a piston (17) reciprocally movable out of, and into a drive cylinder (16), the outer end (18) of the piston being pivotably attached to a link (19), which in turn is pivotably attached at its other end to a guide pin (20) rigidly attached to, and projecting downwards from the underside of the respective flap element (9, 10), said piston being infinitely variably movable to different, selected, fixed positions in its direction of movement via the drive cylinder (16) under actuation of the control means (5).

2. Arrangement as claimed in claim 1, characterized in that the drive cylinder (16) includes an internal thread for coaction with a mating, complementary thread on the

piston (17), such that on turning the drive cylinder (16) in its supporting bearing blocks (21, 22) relative to the piston (17), the latter is moved either into, or out from the cylinder (16) while simultaneously affecting the angular attitude of the respective flap element (9; 10) in relation to the base plate (7).

3. Arrangement as claimed in any one of the preceding claims, characterized in that the control means (5) comprises a thumbwheel (23) mounted for rotation in a holder (24), and connected to the drive cylinder (16) by a cable or wire (25) for translating the rotational movement of the thumbwheel (23) to the drive cylinder (16).

4. Arrangement as claimed in claim 1, characterized in that the respective flap (3; 4) projects out from the front portion (2) of the seat (1) a distance which is substantially one-third of the total depth of the seat (1).

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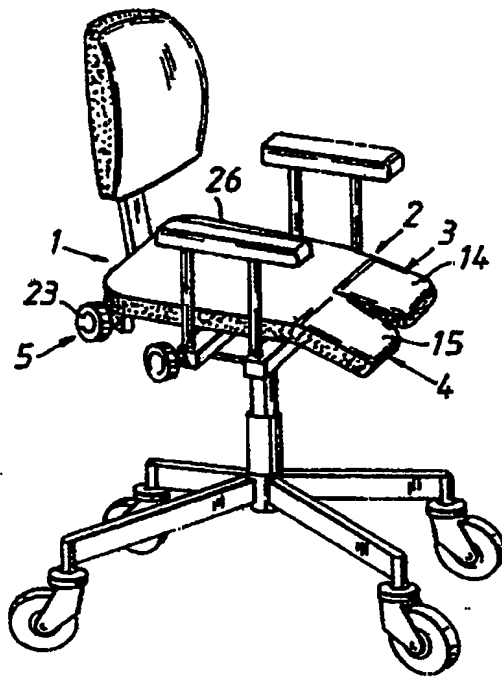


Fig. 1

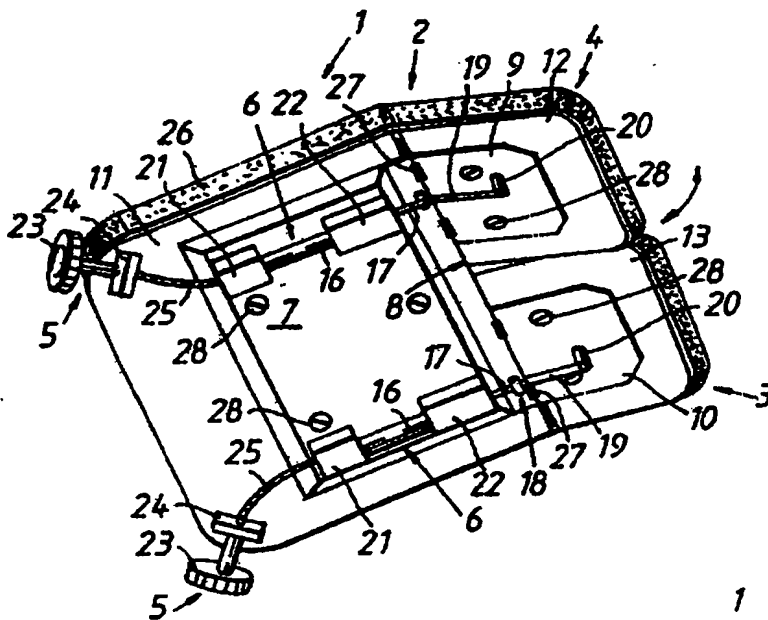


Fig. 2

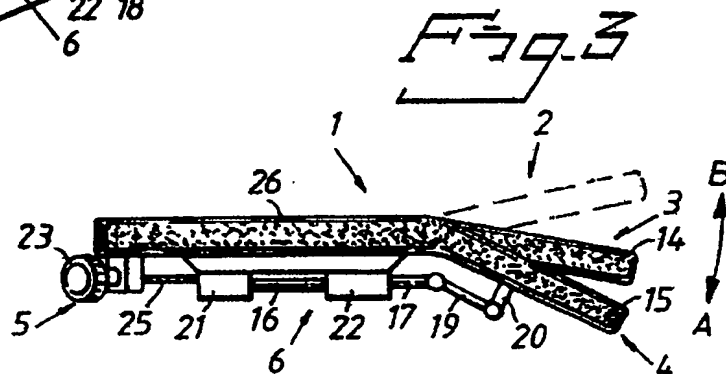


Fig. 3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 93/00185

A. CLASSIFICATION OF SUBJECT MATTER

IPC5: A47C 7/50, A61G 5/10

According to International Patent Classification (IPC) or to both national classification and IPC

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	DE, C, 800488 (FRITZ DRABERT), 28 December 1950 (28.12.50), page 1, line 36 - line 40, figure 1	1-6
Y	US, A, 3446532 (H.W. CRAMER), 27 May 1969 (27.05.69), figures 1-7, abstract	1,2,6
A		3-5
Y	FR, A, 2164162 (WILKHAHN, WILKENNING & HAHNE), 27 July 1973 (27.07.73), page 2, line 23 - page 3, line 25, figures 1,2	1,3-5

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Date of the actual completion of the international search

8 June 1993

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10 -06- 1993

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INTERNATIONAL SEARCH REPORT
Information on patent family members

30/04/93

International application No.

PCT/SE 93/00185

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
DE-C-	800488	28/12/50	NONE		
US-A-	3446532	27/05/69	NONE		
FR-A-	2164162	27/07/73	AT-A,B-	315414	15/04/74
			BE-A-	791580	16/03/73
			CH-A-	555164	31/10/74
			GB-A-	1382172	29/01/75
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